

Standards Identified for Inclusion in the Smart Grid Interoperability Standards Framework, Release 1.0



Overview: NIST is mandated by Congress in the Energy Independence and Security Act (EISA) of 2007 to coordinate the development of a framework of protocols and model standards to achieve interoperability of the Smart Grid. The initial set of standards and specifications listed in the box below for inclusion in Release 1.0 of the Smart Grid Interoperability Standards Framework. Release 1.0 is a work in progress. It is not complete, nor is it exclusionary. Existing standards that do not appear in this first installment to Release 1.0 have not been eliminated from consideration. Moreover, standards currently on the list ultimately may not be included.

The list represents the first step in Phase I of the NIST three-phase plan for smart grid interoperability.¹ It is based on inputs received from participants in the public Smart Grid Interoperability Standards Interim Roadmap Workshop I, held on April 28-29 in Reston, Virginia. Notes and outcomes of the workshop can be found at http://collaborate.nist.gov/twiki-sggrid/bin/view/_SmartGridInterimRoadmap/InterimRoadmapWorkshop1

The more than 400 people who participated in April 28-29 workshop represented a large cross-section of smart grid stakeholders. NIST recognizes, however, that not all interested stakeholders participated in the workshop. Arranged in alphabetical order, the list below will be expanded as the consensus process continues and as the standards framework is developed further to support the functionality envisioned for the Smart Grid and as technology evolves.

Although not included in this initial list, communication standards pertaining to basic connectivity and data networking are also important for Smart Grid interoperability. They will be part of the interoperability framework. Initial standards in these categories will be added following the Smart Grid Interim Standards Roadmap Workshop II, to be held on May 19-20.

Altogether, several hundred standards that are identified or developed over the span of several years may be required to achieve secure, end-to-end interoperability across a fully implemented Smart Grid.

Opportunity to Comment: NIST solicits comments on this list, including recommendations for inclusion. Comments will be accepted for 30 days after publication of this list in the *Federal Register*. They may be submitted to smartgridcomments@nist.gov. Additional information is available at: <http://www.nist.gov/smartgrid>

NIST recognizes that the standards listed below will require further development and that many additional standards and specifications are needed to achieve interoperability of Smart Grid devices and systems. Updated versions of the Smart Grid Interoperability Framework will be published periodically to include additional standards as they are identified by NIST during the process that it is coordinating.

Standard	Application
AMI-SEC System Security Requirements	Advanced metering infrastructure (AMI) and Smart Grid end-to-end security
ANSI C12.19/MC1219	Revenue metering information model
BACnet ANSI ASHRAE 135-2008/ISO 16484-5	Building automation
DNP3	Substation and feeder device automation
IEC 60870-6 / TASE.2	Inter-control center communications
IEC 61850	Substation automation and protection
IEC 61968/61970	Application level energy management system interfaces
IEC 62351 Parts 1-8	Information security for power system control operations
IEEE C37.118	Phasor measurement unit (PMU)communications
IEEE 1547	Physical and electrical interconnections between utility and distributed generation (DG)
IEEE 1686-2007	Security for intelligent electronic devices (IEDs)
NERC CIP 002-009	Cyber security standards for the bulk power system
.NIST Special Publication (SP) 800-53, NIST SP 800-82	Cyber security standards and guidelines for federal information systems, including those for the bulk power system
Open Automated Demand Response (Open ADR)	Price responsive and direct load control
OpenHAN	Home Area Network device communication, measurement, and control
ZigBee/HomePlug Smart Energy Profile	Home Area Network (HAN) Device Communications and Information Model

¹http://www.nist.gov/public_affairs/smartgrid_041309.html